

| NAME<br>P/N<br>QTY   | CRIT | FAILURE<br>MODE &<br>CAUSES                             | FAILURE EFFECT   | RATIONALE FOR ACCEPTANCE  |
|--|------|---|--|---|
| -----  |      |   |  |   |
| POROUS PLATE<br>SUBLIMATOR, ITEM<br>140<br>-----<br>SV783850-24<br>(1) | 2/1R | Internal<br>leakage,<br>coolant to<br>vent circuit.     | END ITEM:<br>Water flow<br>path from<br>coolant<br>passageway to<br>vent loop.                           | A. Design -<br>The interface between the vent circuit and the coolant circuit is a continuous wall of 0.08 thick parent material at an actual stress of less than 200 psi vs the material yield strength of 3500 psi. There are no seals, welds etc. to act as leak paths.  |
| OR<br>-----<br>SV805279-5<br>(1)                                       |      | Structural<br>failure, pin<br>hole in<br>parting sheet. | GFE INTERFACE:<br>Water leakage<br>into vent<br>loop. Water<br>carryover,<br>possible<br>helmet fogging. | B. Test -<br>Component Acceptance Test -<br>A leakage test is performed on the coolant loop per AT-E-140-2. With the coolant loop pressurized to 28.1 - 29.1 psig, and the vent loop open to ambient, leakage is observed for 60 minutes minimum and must not exceed 3 scc/hr.<br><br>PDA Test -<br>A combined water circuits leakage test is run per SEMU-60-020. In this test the water circuits are pressurized to 15.7-15.9 psig with water for 60 minutes minimum. Leakage must not exceed 6 scc/hr. |
|  |      |   | MISSION:<br>Terminate EVA.   | Certification Test -<br>Certified for a useful life of 25 years (ref. EMUM1-0243, EMUM1-1269).  |
|  |      |   | CREW/VEHICLE:<br>None for<br>single<br>failure.<br>Possible loss<br>of crewman<br>with loss of<br>SOP.   | This component (Item 140) is certified for the coolant loop proof pressure of 42.2 psid because the calculated safety factor for yield is 15.1 (for bulging of the coolant loop plates) at the 28.1 psid maximum operating pressure.  |
|  |      |   | TIME TO EFFECT<br>/ACTIONS:<br>Minutes.<br>Activate SOP,<br>turn off fan,<br>open purge<br>valve.        | C. Inspection -<br>The parting sheets are 100% inspected in assembly.   |
|  |      |   | TIME<br>AVAILABLE:<br>Minutes.   | D. Failure History -<br>None.   |
|  |      |   | TIME REQUIRED:<br>Seconds.   | E. Ground Turnaround -<br>Tested for non-EET processing per FEMU-R-001, Water Servicing Leakage, and Gas Removal. None for EET processing.  |
|  |      |   | REDUNDANCY<br>SCREENS:<br>A-PASS<br>B-PASS<br>C-PASS   | F. Operational Use -<br>Crew Response -<br>PostEVA: No response, single failure undetectable by crew or ground (recharge).<br>Training - No training specifically covers this failure mode.<br>Operational Considerations -<br>EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.  |

EXTRAVEHICULAR MOBILITY UNIT  
SYSTEMS SAFETY REVIEW PANEL REVIEW  
FOR THE  
I-140 SUBLIMATOR  
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

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